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Newsletter of the
Hawaiian Botanical Society
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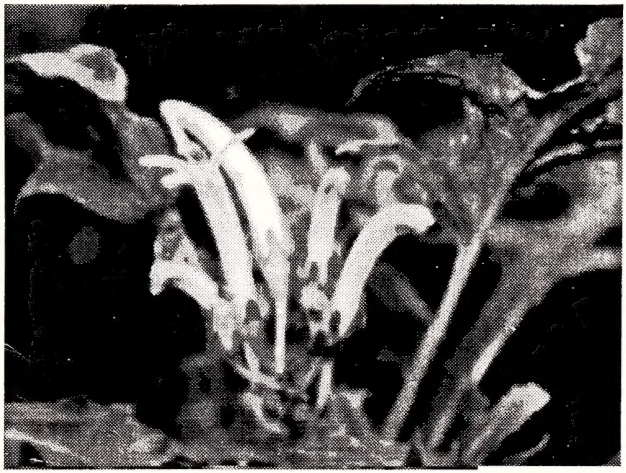
Not Seen for 30 Years

Gregory A. Koob
Harold L. Lyon Arboretum,
University of Hawai'i at Mānoa

In July of this year a plant that hasn't been seen in flower for at least 30 years started opening it's blossoms in the main greenhouse of the Lyon Arboretum. One of two plants of *Cyanea pinnatifida* growing in the greenhouse rewarded the staff of the Arboretum with its first flowers. Since then several people have been in to see and photograph this event. As of this writing (early September, 1995) the plant is still flowering and there are several more buds still waiting to open.

Continued on page 3



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Published by the Hawaiian Botanical Society, which was founded in 1924 to "advance the science of botany in all its applications, encourage research in botany in all its phases, promote the welfare of its members and develop the spirit of good fellowship and cooperation among them." Any person interested in the plant life of the Hawaiian Islands is eligible for membership. Information may be obtained from the Society:

c/o Department of Botany
3190 Maile Way
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Honolulu, HI 96822

Membership

The Society year is from December 1 through November 30.

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Continued from page 1

There is only one plant known to exist in the wild of this endemic species of Campanulaceae. It is growing on The Nature Conservancy of Hawai'i land in the central Wai'anae Mountains on O'ahu. According to the *Manual of Flowering Plants of Hawai'i* (Wagner et al., 1990), this plant has not been collected since 1965. John Obata, a well-known Hawaiian plant expert, feels that it has probably flowered in the wild but nobody was around to see it. Seeds have never been collected from this species in the wild.

A boulder threatens the last remaining plant in its native habitat. For that reason I went out with Loyal Mehrhoff (then with the Bishop Museum) and Heidi Bornhorst (then with TNCH) to collect vegetative material for propagation using tissue culture techniques. Two side shoots were removed from the mother plant and brought back in deionized water to my lab at the Lyon Arboretum for use in a micropropagation experiment. The two shoots already had some roots growing from their bases so I took what material I needed for my work (a few buds and a couple of leaves) and brought the remainder of the shoots to the greenhouse. Since then, those two shoots have grown in pots in the Arboretum greenhouse under the watchful eye of Carol Nakamura, research technician in charge of the greenhouses. It is one of those two plants that is now flowering.

Immature flower buds were collected and preserved in Carnoy's colution and will be used to get a chromosome count for this species.

The flowers have been hand pollinated and fruit set has occured in some cases. Three collections of immature seeds have already been harvested since the plant is aborting its fruit before they can mature. Luckily we have the micropropagation facilities at the Arboretum where we have established the protocol for germinating immature seeds of Campanulaceae, as well as other taxa. On September 14, almost two months from the time the immature seeds were sown in a test tube on artifical, sterile medium, seven seedlings had already

germinated. If they survive, they will be the first sexually propagated plants of this species known in existence.

The buds and leaves that I used for micropropagation both yielded results. From those original explants I have now produced over a thousand plants. Some of these have been distributed to the National Tropical Botanical Garden, the Honolulu Botanical Garden system and to the Arboretum's own greenhouses. Though many more could be produced, we don't have the space to store so many copies of just one clone. Until the State regulations controlling the distribution of endangered species are relaxed, we will have to keep the numbers within reasonable limits.

A controlled experiment will be conducted using these clones to determine the best potting medium, environmental conditions, and fertilizer regimes needed for pot culture. It is hoped that it will eventually be possible to replant this species in the wild.

The germination of the immature seeds is a promising sign. If the seedlings survive *in vitro* culture (a strong possibility since the protocol for growing this species *in vitro* has already been established) they will be cloned. Copies of these seedlings, and seedlings produced in the future, can be used to establish a potentially viable population back in the wild.

Until that times comes, though, we'll enjoy what few have seen and do our best to ensure future generations the same opportunity.

Book Review

Vickie Caraway

Ferns of Hawai'i

Kathy Valier, University of Hawaii Press, Honolulu, HI, 1995, 88 pp., 27 color photos, 71 black and white, ($14.95), paperback.

Since the publication of the *Manual of the Flowering Plants of Hawai'i*, a void has become evident in the botanical literature of the state when referencing or identifying native ferns. Valier's new book is not an attempt to occupy this publishing niche, but is aimed more at the casual fern enthusiast. The book consists mainly of short, non-technical descriptions of 56 ferns, and their families, found in Hawai'i, along with Latin, English and Hawaiian names, ethnobotanical uses, habitats, and distributions. The introduction gives very basic information about fern reproduction and plant nomenclature.

If you are looking for a reference book to use to identify native or introduced Hawaiian ferns, *Ferns of Hawai'i* does not attempt to be a botanical study. Valier mentions that ferns are classified based on the arrangement of the sori but her descriptions do not contain much of this information for indivdual species. The arrangements can be seen in some of the photographs but a positive identification is difficult at best.

The criticisms concerning the book are due in part to my disappointment that the book did not meet my personal expectations of what would be included in a Hawaiian fern reference. It is a good trailside book to help in recognition of some of the more common ferns in the state as each plant description is accompanied by a photograph. And it is the only book in print written about Hawaiian ferns of which I am aware. *Ferns of Hawai'i* gives a good idea of the variety of ferns native to Hawai'i and offers a starting point for fern identification in Hawai'i and is worth the purchase price.

Endangered Species Notes*

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(This article and the following announcement were pulled from the Internet, courtesy of Benton Keali'i Pang — ed note)

July 4, 1995

Sweet Home Decision a "Sweet Victory"

The *New York Times* called the Sweet Home decision a "sweet victory" for wildlife, but warned that opponents "now vow to take their fight back to Capitol Hill where Congressional conservatives are already preparing to gut the ESA." The *Times* says that if ESA opponents "go too far and undermine the nation's ability to control the degradation of its ecosystems," President Clinton "must not be shy about using his veto." In the Northwest, a *Seattle Post-Intelligencer* article predicts that the decision will spur timber companies to go to the Fish and Wildlife Service to write habitat conservation plans (HCPs)." Although the timber industry... stepped up their call for Congress to reform the act, the conventional wisdom in this region was that few companies would wait," the *PI* reports. The FWS worries that they may not have enough biologists to handle new plans; there are already 21 timber companies or agencies in the Northwest asking for HCPs.

July 6, 1995

Snail Back on List

A decision by the 9th US Circuit Court of Appeals has returned the Bruneau Hot Springs snail to the endangered species list, overruling a lower court decision that removed the snail because of procedural issues. The snail is found only along five miles of the Bruneau River in Idaho and is threatened by ground water pumping. The ruling was a victory for the Idaho Conservation League and the Committee for Idaho's High Desert, which appealed the case. Greg Nelson of the Idaho Farm Bureau said his organization was "willing to work

with conservationists on water management changes aimed at eliminating the need for a listing," AP reports.

July 10, 1995

Reports on Draft Young Bill

Friday's *Congress Daily* says that a draft ESA bill prepared for Rep. Don Young includes "some provisions similar to legislation introduced" by Sen. Slade Gorton, with the addition of private property compensation. The draft would "add new scientific peer review requirements.., require consideration of captive bred populations in listing species[,] increase the role of states in some key decision points," and "redefine prohibited 'harm' to a species on private land." The bill would also weaken the Section 7 consultation process and repeat the "conservation objective" provisions of the Gorton bill allowing the Secretary of Interior to virtually choose the extinction of species. *Congress Daily* reported that neither Young nor ESA Task Force Chair Richard Pombo have signed off on the draft.

July 13, 1995

Clinton for Exemption

In a surprise announcement yesterday, the White House released a statement endorsing earlier proposals from the Secretary of the Interior to "create a regulatory presumption in favor of new threatened species exemptions for residential property and small scale disturbances of 5 acres of less" for future listings. "Under these reforms, the vast majority of all American homeowners will never have to worry about endangered species," said Clinton. "Specifically, for ESA programs, the Department of Interior will essentially eliminate restrictions on single family homeowners with five or fewer acres of land." Clinton said that the proposal "is common sense, reasonable reform — not a reckless, destructive rollback of health and environmental safeguards, as others are proposing."

July 14, 199

Bald Eagle Delisted

It's official: the bald eagle is now off the list of endangered species,

although it is still considered "threatened" under the ESA. "The bald eagle is a testimony to what Americans can do to conserve wildlife and our natural heritage," Interior Secretary Bruce Babbitt said for the occasion. Interior says that bald eagle populations have doubled every six to seven years since the late 1970s. "While banning DDT was vital, the eagle could not have recovered had there not been strong laws such as the ESA to protect its habitat and promote recovery," said FWS Director Molly Beattie.

July 18, 1995

Reps Pombo and Young Ready Bill for Introduction

A July 11 Dear Colleague letter from Rep's Young and Pombo describes to members the bill "we intend to introduce." Included in their outline are provisions to eliminate the God Squad, remove habitat protection on private lands (in response to the Sweet Home case recently decided by the Supreme Court), prohibit the designation of critical habitat without landowner compensation or permission, and prohibit protection of distinct populations without specific congressional action (like the Bald Eagle Protection Act). As yet, there is no word on when to expect an actual bill introduction.

Physicians Urge Reauthorization of a Strong ESA

In a July 5th letter to members of congress, Physicians for Social Responsibility state that "the Endangered Species Act has dramatically protected and enhanced public health [and] it is imperative that this law remain strong." They note that "of the top 150 prescription drugs in theUnited States, 79% are derived from natural sources." These drugs "are the product of millions of years of evolution, and could not be invented by the mind of man." The organization also notes the folly of conducting cost-benefit analysis for species without knowing the medicinal value of biodiversity.

Can Developers and Species Live in Harmony?

Habitat for the threatened California gnatcatcher, on Southern California's shoreline and coastal hills, encompasses terrain rich for wildlife as well as high-priced real-

estate deals. The *Chicago Tribune* reports that a Habitat Conservation Plan is being applied to the gnatcatcher situation with promising results. Lindell Marsh, a California land- use attorney who helped pioneer the plan says "If you can do this plan here, with all this high-value land... you can do it anywhere." Representatives from Fieldstone Company, one of many developers to sign onto the plan state, "If we didn't have a conservation plan, two-thirds of our property would have been undevelopable." The plan is being held up as a national model; some environmentalists note that if not for the threat of the ESA, many of the players would not have come to the table. Without the habitat plan, biologists have determined that expanding urbanization could wipe out the bird within 20 years.

July 21, 1995

Scientific Foundation Strong

A "scientific consensus report" from the Ecological Society of America says that the ESA "is a powerful and sensible way to protect biological diversity." The new report says that the ESA is" firmly based on scientific principles" but argues for strengthening the Act. "It is important to understand that proactive habitat protection is needed in addition to species-oriented protection efforts if the goals of the Act are to be achieved in a scientifically sound, cost-effective manner," says the group's president-elect, Gordon Orians.

July 25, 1995

ESA is Women's Issue

Over 50 women attending a Breast Cancer and Environment Conference in New Orleans this past weekend have signed a letter to female Members of Congress asking for their support for a strong ESA. "As women who are intimately aware of the devastating effects of breast cancer and ovarian cancer, we urge you to make your voice heard in the ESA debate," the women wrote. "The ESA protects not only our country's precious plants and animals, it also protects the countless medical clues and miracle cures they may hold." The letter urges the female Representatives and Senators "to recognize a strong ESA as a health issue — a

women's issue — and as an insurance policy for future cures yet to come."

ESA Hearing Postponed

Difficulty in agreeing on witnesses for the third in a series of ESA hearings by the Senate drinking water, fisheries, and wildlife subcommittee has resulted in its postponement. Originally scheduled for this Thursday, it is now uncertain when the hearing will beheld. The hearing was to focus on ESA consultations, incentives for species protection, and habitat conservation plans. The subcommittee plans two field hearings for the week of August 14, in Nevada and Wyoming.

Wise Use Conference Rejects "Reform"

About 75 wise use activists gathering in Reno NV this past weekend joined Rep. Helen Chenowith (R-ID) in calling for Congress to "replace, not reform" the ESA. "The ESA is locking up our land," Chenowith said. "Reform is not an acceptable answer." Chenowith added that she and her supporters "have taken compromise out of the dictionary." Plans were announced at the gathering for a 45 day campaign to convince Republican leadership in the Congress to reject current bills and endorse a measure based on "voluntary, non-regulatory incentives."

July 26, 1995

Arboreta for ESA

"In the preservation of diversity is our own best hope for survival as a society," says the American Association of Botanical Gardens and Arboreta in a resolution calling for a strong ESA approved last Saturday at their annual meeting in Montreal. The resolution was presentedby Dr. William McK. Klein of the National Tropical Botanical Garden, HI.

Extinction Rate Studied:

Ecologists have calculated recent extinction rates at well-known "extinction centers" and found that rates are 100 to1000 times as high as the prehuman "background" extinction rate, the *New York Times* reported yesterday. The study, led by Dr. Stuart L. Pimm of the University of Tennessee, is chronicled at greater length in the current issue of *Science* magazine. The *Times* article cites freshwater fish and

mollusks as examples of endemic species in North America which are very vulnerable: in the last century, 21 of 197 freshwater mussels and clams and 40 of about 950 species of freshwater fish have gone extinct. The article also quotes Dr. Daniel Simberloff of Florida State University that when biologists meet, "we're basically exchanging horror stories" about species in trouble. "It's happening in every taxon and every habitat," Simberloff says. "That's why we're confident in saying there is a real crisis here and it's getting worse, not better."

July 27, 1995

ESA About Ecosystems

In an interview printed in the August/September *MIT Reporter*, political scientist Stephen Meyer says that the ESA should have a different name because it is really about ecosystems, not species. Meyer, who published a report earlier this year showing that listing of endangered species is linked to states with strong economies, not weak ones, says that one of the political problems the ESA faces is that "science almost always looks weak in public policy compared to anecdotes." Meyer cites the efforts of Rep. Richard Pombo and his ESA Task Force "looking for citizens who say that fish, turtles, or owls have ruined their lives."

Canadian ESA?

A report from the Canadian Endangered Species Coalition indicates that over 80 groups have expressed their support for a "strong, effective federal ESA" in Canada including the National Farmers Union, the ACTRA Performers' Guild, the United Church of Canada, and the Canadian Bar Association. Canada does not have an ESA but efforts by the Coalition are expected to result in legislation being filed soon.

Aug. 2, 1995

Gingrich Meetings

Meetings between scientists, the Environmental Defense Fund, and House Speaker Newt Gingrich are the subject of a news item in this week's *US News and World Report*, which asks "How Green is Gingrich?" The article reports on a series of meetings that Gingrich has had with Terry Maples of the Atlanta Zoo; paleontologist Steven Gould; biologist E.O. Wilson; and Dr. Thomas Eisner, a Cornell

ecologist who is chairman of the Endangered Species Coalition. "The key is Gingrich is intensely interested in animals," the article quotes Dr. Wilson. "They have already convinced Gingrich of the ecological importanceof smaller organisms, such as fungi and insects, and may have influenced his decision to oppose Republican efforts to gut the ESA," the article says. The group says they want to provide Gingrich with "scientific information and legislative options."

Interior Bill Today?

The Interior Appropriations bill is now expected to be considered on the Senate floor either today or in an unusual Saturday session of the Senate, with the probability of at least one amendment to add ESA funds. Sen. Harry Reid (D-NV) is still planning to offer an amendment, which may seek to add $8 million for prevention ("prelisting") and habitat acquisition programs for endangered species. Sen. Barbara Boxer (D-CA) may also offer an amendment, possibly to add ESA funds and also funds for other wildlife programs. Sen. Frank Lautenberg (D-NJ) may join as co-author of one or both amendments. The conference committee on the Interior Appropriations bill is expected to meet in mid-September to reconcile differences between House and Senate versions of the bill.

August 15, 1995

Condors to Arixona

A half dozen captive bred California condors will be released in the Vermilion Cliffs area of Arizona near the Grand Canyon this December, says an article in Sunday's *Los Angeles Times*. The release is part of a long-term plan to establish at least two separate wild condor populations, each with 150 birds and 15 breeding pairs, says Robert Mesta of the federal FWS. "It's been my feeling that the biology is just wonderful. The birds will do great there," said Michael Wallace, a Los Angeles Zoo curator heading the Condor Recovery Team. There are now 104 condors in captivity, and 14 captive bred condors in the wild in California.

August 16, 1995

ESA Works in Wyoming

The ESA has done a "remarkable job protecting species while balancing needs of people and other economic factors in Wyoming," said business owners and conservationists before the ESA hearing to be held by the Senate subcommittee on drinking water, fisheries and wildlife today in Casper, WY. "Not only has Wyoming been successful at recovering many species, but we have accomplished this while balancing economic concerns," said Steve Thomas, a former Teton County commissioner now with the Greater Yellowstone Coalition. "The ESA is good for Wyoming's wildlife and Wyoming's economy," said Tom Seegerstrom, an outfitter whose livelihood is tied directly to environmental quality.

Newsday for ESA

Sen. Slade Gorton's ESA bill would do by law what the Supreme Court refused to do in the Sweet Home case, says Long Island's *Newsday*: "permit the extinction of endangered species by destruction of their habitat, while purporting to protect them." Their recent editorial also attacked efforts by Republicans to stop the ESA by cutting its funds. *Newsday* warns of plans to "reform" the ESA: "in this Congress, the 'reform' label is practically mandatory for attempts to gut landmark environmental laws."

August 21, 1995

Subsidies Harm Species

Federal taxpayers spend over $1 billion a year to support mining, grazing, logging, and recreation on federal lands, as well as water projects, all of which contribute significantly to the endangered status of wildlife, says an article in the current *BioScience*. Five authors including David Wilcove of EDF and Carolyn Alkire of The Wilderness Society say that the $1 billion does not include $136 million for recovery of species and other "hidden costs" related to ecosystem degradation. The federal subsidies have contributed to the depletion of more than 2/3 of U.S. endangered species; case examples include mining in the San Bernardino NF, logging in the Idaho Panhandle NF, livestock grazing on BLM land in Arizona, ORV use on BLM land in California, and water

projects in the Columbia River Basin.

August 22, 1995

Boone Suit

The Southern Appalachian Biodiversity Project and Kentucky Heartwood have filed a notice of intent to sue over the alleged failure of the Daniel Boone National Forest to consult with the FWS overlogging, mining, roadbuilding, and ORV use which may affect various endangered fish species, mussels, and the Indiana bat. "Once again, the citizens of Kentucky will be forced to take legal action to assure that the Forest Service complies with laws that protect our public lands," Chris Schimmoeller of Heartwood told the AP.

August 25, 1995

Poll is Mixed News

The fourth annual Times Mirror Magazines National Environmental Forum Survey has mixed messages for the environment. Sixty-nine percent of those surveyed said that environmental protection and economic growth can go hand-in-hand, and 63% say that the environment should win if compromise is impossible. Forty-two percent of those polled said that regulations for endangered species have "not gone far enough," but that is down from 51% last year. And the number who say that regulations for endangered species have "gone too far" is up to 22% from 16% last year.

What's in a Name?

Hundreds of scientists started work Wednesday at the Earth Summit in Wales on the task of naming the world's plants and animals. "The proposal now being put into operation is to develop a global network of organizations and individuals interested in documenting the diversity of life," says Mike Claridge of the University of Wales. "Scientists and environmentalists say that finding and documenting as many different animals and plants as possible is vital... for medical as well as other reasons," Reuters says. The article reports that there are an estimated 30 million species in developing countries alone, 85% of which have not been identified.

How can you have access to Country Plant Genetic Resources Information ?

The FAO International Conference and Programme on Plant Genetic Resources(ICPPGR) has set-up a Web server (http://web.icppgr.fao.org) in order to provide to the research community a set of country reports related to Plant Genetic Resources. These reports have been prepared by the countries and submitted to FAO. FAO cannot confirm the information contained in the reports nor accept responsibility for opinions expressed therein.

The reports generally are structured as follows:

- **Chapter 1** Introduction to (Country) and its Agricultural Sector
- **Chapter 2** Indigenous Plant Genetic Resources
- **Chapter 3** National Conservation Activities
- **Chapter 4** In-country uses of Plant Genetic Resources
- **Chapter 5** National Goals, Policies, Programmes and Legislation
- **Chapter 6** International Collaboration
- **Chapter 7** National Needs and Opportunities
- **Chapter 8** Proposals for a Global Plan of Action

The access is free.

For the country reports, The address is:

http://web.icppgr.fao.org/ICPPGR/Document/ICPPGR/CR.HTML

For the other information related to the Fourth International Technical Conference on Plant Genetic Resources, the address is:

http://web.icppgr.fao.org

NEWSLETTER OF THE HAWAIIAN BOTANICAL SOCIETY
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